

From the London Review.
ONE OF THE MARVELS OF THE NINETEENTH CENTURY.
SOUND RECORDING ITSELF.

Among all the marvels of mechanical ingenuity which are being daily brought to perfection, none are more interesting than those which aim at the accomplishment of some task apparently requiring intellect, in addition to more mechanical dexterity for its execution. It is difficult to conceive a mechanical operation which requires a greater exercise of intellect than that of verbatim reporting by means of short-hand. Yet even this art seems likely, before long to be supplanted. For several years a French savant, M. L. Scott, has been engaged in experiments on the fixation of sound upon a prepared tablet, in the same way as a photography fixes a simultaneous image; and has met with considerable success in this new art, which he has named Phonography. At the last sitting of the French Academy of Sciences, a short communication was made by the discoverer in consequence of the publication of some experiments in the same direction made by other gentlemen. This communication was devoted chiefly to a description of certain illustrations laid before the members, and would be unintelligible to the general reader without the diagrams, and a knowledge of what had previously been accomplished by Mr. Scott. The subject, however, being of immense importance, and likely now to attract great attention, and having ourselves watched its development for several years, as having had many opportunities of inspecting the phonographic representations of sound autographically recorded by Mr. Scott's instrument, a short account of what has already been done by this physicist will perhaps be considered of interest.

The problem which first required solution was the artificial construction of an ear, by means of tubes and diaphragms, so as to imitate, as nearly as possible, the human ear, in its power of collecting sounds of every degree of intensity, and transmitting them to a delicate membrane placed at the extremity. After numerous essays an apparatus was constructed which possessed the above qualifications, the membrane was seen to vibrate visibly, and in a different manner, with each audible sound or note; and if a pen or style were fastened to the membrane its point would trace the wonderfully beautiful and complicated curves and circles appertaining to the elements of sound. The next difficulty consisted in finding a sensitive surface upon which this style could mark the imprint of its movements; for the vibrations of the aerial pen were so delicate that if any appreciable force were required to effect the transcription, the resistance would at once stop all movement. This difficulty was at last overcome by employing a strip of thin paper, upon which was deposited a film of lamp-black obtained from the smoke of burning bodies. This sensitive surface is carried along by clock-work gear, in a sort of the vibrating style, so that the successive movements of the latter shall not be in a line on the paper, which the result is a series of lines written on the paper, composed of the most complicated systems of curves, and forming a natural autograph of the producing sounds.

Of course it will be understood that the above is intended more as a brief outline of the principle of Mr. Scott's instrument, than as an exact description of its individual details. In reality, especially the one recently made, it is far more complicated than would be imagined from this brief sketch; but the phonograph is pointed out by it as marvellously perfect. Every separate source of sound has an individuality of its own. The sounds of different musical instruments, for instance, are easily distinguished from one another, and from the human voice. The latter, moreover, gives different traces according to its character—the sweet soft voice of a female, especially when singing, being characterized by great beauty and harmony in the curves impressed on the paper; in those produced by the harsher voice of a man, the curves are larger and more rugged looking; whilst in a shriek or a shout, or in the harsh, discordant sounds of instruments, the waves are irregular, unequal, and broken up into secondary vibrations of all degrees of amplitude.

An oration, delivered with varying rapidity, and with the pitch of the voice greatly modulated in different parts, has a very striking appearance in its phonograph. Rapidly spoken parts have the curves crowded together, whilst in others they are widely separated. The loud tones of the voice are shown by the written waves rising to perhaps half an inch or more

in height, whilst the low tones are not more than the eighth of an inch high; the modulations of the voice are thus shown very beautifully by the varying height of what may be called the letters of sound.

Thus, then, the problem of the graphic fixation of sound may be considered as accomplished; but now a new difficulty arises—that of translating these ever varying curves back again into ordinary language. If each word or syllable, or even compound sound, of which our spoken language is built up, were invariably represented by the same system of curves, the work of transcription would be comparatively easy. This, however, is far from being the case. Not only does the impression vary with the tone of the voice, the rapidity or loudness of utterance, but it has been found that the same words uttered by one person are written down by the instrument very differently from the way they are when spoken by another; just as the handwriting of one person differs from another. This, however, is a difficulty which will be overcome by practice, and perhaps improved instrumental arrangements; even now we hear that Mr. Scott is attaining some facility in reading off these natural stenographs. The difficulties, however, in the way of fluent transcription into written language are very great, as the student in this new language has so many different forms presented to him as the equivalent for the same articulated sound; the tracings not being either a true synthesis of the words, nor a purely conventional sign like writing, which has, let us remember, no phonomimetic value, but is merely to use a mathematical expression, a function of the tones, the intensity and the pitch.

The fact of being able to make spoken sounds record themselves permanently on paper is of itself most singular and astonishing; but if it is ever developed, as the inventor says it shortly will be, to sufficient perfection to enable it to take down speeches which may be written off verbatim, it is difficult to imagine the importance of the discovery, whether it be in respect to the unimpeachable accuracy of the process, the future absence of trouble and expense in reporting any articulate sounds, or the great saving of the time and the exhausting labors of our parliamentary reporters.

SINGULAR INTERFERENCE.

In 1776, Admiral Watson, having sailed with his squadron and the King's troops from Fort St. David to the assistance of Calcutta, in the East Indies, stopped at Mayapore, on the banks of the Ganges, where the enemy had a place of considerable strength, called Bangor Fort, which it was necessary to secure before he proceeded any further in the expedition. The action was begun by a brisk cannonade from the squadron, which soon silenced the cannon of the fort; but the garrison not offering to surrender, and continuing to discharge fire-arrows and small arms, it was determined, in a council of sea and land officers, that Colonel Clive should endeavor to take it by assault. For this purpose, at five in the evening, the Admiral landed an officer, two midshipmen and about forty sailors from each ship, under the command of Captain King, to assist the Colonel in storming the fort, which he intended doing just before daylight, under cover of two twenty-four pounders, mounted close to the ditch. In the meantime, the Colonel had given directions that the whole army—the necessary guards excepted—and the detachment from the ships should rest on the ground, in order to recover themselves as much as possible from the fatigues they had undergone in the preceding day's service.

All was now quiet in the camp; and we on board the ships, which lay at their anchors but a small distance from the shore, had entertained thoughts of making use of that interval to refresh ourselves with an hour or two of sleep; but suddenly a loud and universal exclamation was heard from the shore, and soon after an account was brought to the Admiral that the fort had been taken by storm. This was a joyful piece of news, and the more so as it was quite unexpected, but when the particular circumstances that entered in this success were related, our exultation was greatly abated, because we found that the rule of discipline necessary in all military exploits had been entirely disregarded in the present instance, and therefore could not help looking upon the person who had the principal hand in this victory rather as an object of chastisement than of applause. The case was this:

During the tranquil state of the camp, one Strahan, a common sailor belonging

to the Kent, having just been served with a quantity of grog (arrack mixed with water), had his spirits too much elated to think of taking any rest; he therefore strayed by himself towards the fort, and imperceptibly got under the walls. Being advanced thus far without interruption, he took it into his head to scale at a breach that had been made by the cannons of the ships, and having luckily gotten up on the bastion, he there discovered several M or men sitting upon the platform, at whom he flourished his cutlass and fired his pistol, and then, having given three loud huzzas, cried out: "The place is mine!"

The Moorish soldiers immediately attacked him, and he defended himself with incredible resolution, but in the encounter had the misfortune to have the blade of his cutlass cut in two about a foot from the hilt. This mischance, however, did not happen till he was near being supported by two or three other sailors who had accidentally straggled to the same part of the fort on which the other had mounted. They, hearing Strahan's cries, immediately scaled the breach likewise, and echoing the triumphant sound, raised the whole army, who taking the alarm, fell on pell mell, without order and without discipline, following the example of the sailors. This attack, although made in such confusion, was followed with no ill consequence but the death of the worthy Captain Douglas Campbell, who was unfortunately killed by a musket ball from one of our own pieces in the general confusion. Captain Coote commanded the fort for that night, and at daylight the fort saluted the Admiral. It was never exactly known what number of Moors there were in the fort when our people first entered. We took in the fort eighteen cannons, from twenty-four pounders downwards, and forty barrels of powder.

Strahan, the hero of this adventurous action, was soon before the Admiral, who notwithstanding the success that had attended it, thought it necessary to show himself displeased with a measure in which the want of all military discipline so notoriously appeared. He therefore angrily upbraided into the desperate step which he had taken.

"Mr. Strahan, what is this you have been doing?"

The fellow, after having made his bow, scratched his head, and with one hand twirling his hat upon the other replied:

"Why, to be sure sir, 'twas I who took the fort, but I hope there was no harm in it."

The Admiral, with difficulty, was prevented from smiling at the simplicity of Strahan's answer, and the whole company were exceedingly diverted with his awkward appearance and his language and manner in recounting the several particulars of his mad exploit. Mr. Watson expatiated largely on the fatal consequences that might have attended his irregular conduct, and then with a severe rebuke, dismissed him—but not before he had given the fellow some distant hints that at a proper opportunity he would be certainly punished for his temerity. Strahan, amazed to find himself blamed where he expected praise, had no sooner gone from the Admiral's cabin, than he muttered these words:—"If I am flogged for this ere action, I will never take another fort by myself as long as I live, by G—d!"

The novelty of the case, the success of the enterprise, and the courageous spirit which he had displayed, pleaded strongly with the Admiral in behalf of the offender; and yet, at the same time, the discipline of the service required that he should show him outwardly some marks of his displeasure. This the Admiral did for some little time, but afterwards, at the intercession of some officers, which intercession the Admiral himself prompted them to make, he most readily pardoned him. And it is not improbable, that had Strahan been properly qualified for the office of boatswain, he might, on some other pretence, before the expedition had ended, have been promoted to that station in one of his majesty's ships. But unfortunately for this brave fellow, the whole tenor of his conduct, both before and after the storming of the fort, was so very irregular as to render it impossible for the Admiral to advance him from his old station to any higher rank, how strongly soever his inclinations led him to do it.

From the Chicago Times.
REVIVAL OF BUSINESS IN CHICAGO.

In the midst of general depression and commercial stagnation, so noticeable at this time throughout the entire country, our own city is showing evidences of returning prosperity which are truly encour-

aging. The grain trade, always heavy during the season of navigation, has this year been altogether unprecedented in extent; and although prices have ranged below the average, yet the receipts and shipments reach a far greater aggregate than they ever have before. This has produced a corresponding activity in our extensive lake marine; freights have ruled high, and many hundreds of seamen have thus had steady employment at remunerative wages; all the ship yards have been overrun with orders, and, in addition, scores of laborers have found work in the warehouses and elevators skirting the river. The railroads, although exhibiting a marked decrease in their earnings for a month or two past, are, on the whole, doing much better than was anticipated. The grocery and dry goods jobbers are, as a class, driving a brisk fall business, and there is a decided improvement manifested in other branches of the wholesale trade. Retailers are all busy; and, with their decreased expenses and light stocks, seem to be for the most part satisfied, under the circumstances, with their present prospect. Several of our clothing and shoe firms are making up heavy contracts for the army, and a number of saddlery houses and wagon builders are similarly engaged. A large increase to the banking capital of Chicago has recently been made, as well as to other branches of business, by the removal here from Cincinnati, St. Louis, and Louisville of some half-dozen or more heavy concerns. For it is a fact beyond all question that an extensive emigration from the South has been tending towards this city for months past. This is proven by the scarcity of dwellings, it being now almost an impossibility to find a tenement that is at all desirable for rent; and one of the leading agents informs us that the applications he daily receives for dwellings far exceeds his ability to supply.

It is worthy of note in this connection that nearly all mercantile transactions are this season based upon cash on delivery. This brings a large amount of money into circulation, and enables merchants to meet their pecuniary obligations with promptness. The real estate brokers report more sales of property within the past sixty days than have transpired for two years previous; and these, also, have been principally for cash. Taking all these facts into consideration, there is no doubt that Chicago is suffering less from the war than any other large city, and that the fall trade which has opened so fair and bright, is destined to carry her forward on a prosperous business career.

The Prospects of European Monarchy shaken by the American Insurrection.

By the news from Europe our readers will perceive that the English funds have fallen; that the Bank of France has been drained of its specie, owing to a deficient harvest and the purchase of breadstuffs abroad; that it had increased its rate of discount, creating thereby a great outcry in the commercial world, and that the price of bread had advanced in Paris, producing a bad impression, and adding to the despondency of the Paris Bourse. Times of monetary and social derangements in France, and the stagnation in England, which is the forerunner of similar phenomena in that country, are explained in the London Times by "the American crisis which has paralyzed everything."

Now these developments are but the beginning of a snow-storm—the precursors of a great financial and commercial revolution, which, if the war continues for eighteen months longer, will sweep over all Europe, and result in a terrible revolution overturning old ones which seem already tottering to their fall.

The war has scarcely yet begun. It is only six months since the President issued his proclamation for volunteers. What is the effect already upon England? In the last nine months, from the previous apprehension of it, we have imported a little from Great Britain that her trade with us has fallen off one hundred millions of dollars, while her necessities have forced her to take our surplus breadstuffs and export, and will continue at least for the ensuing year. The result will be that she will be drained of her specie to an extent that will disturb all her financial affairs; her securities will go down rapidly, her cotton bolls will be stopped from the want of the raw material from the insurgent States, the expected supply from other countries not being available for some time to come; all her manufactures will severely suffer because of the diminished demand in this country, and her commerce will be almost annihilated. Millions of the population will be thrown out of employment,

and extreme poverty, suffering and discontent will become the inflammable elements of revolution, which will only require the match of the political incendiary to set them in a blaze.

These observations apply to France as well as England, and we would not be surprised if, in the course of next spring, financial, commercial and manufacturing bankruptcy would become general in both countries, and social disorders begin to develop their virulence. Certain it is, if the war should continue till the spring of the following year, England, France and all Europe will be completely revolutionized. They are sending expeditions to Mexico, and more troops and ships-of-war have been despatched to Canada. But these operations will not help England and France, but, on the contrary, by the expenditure of money, will hasten the commencement of their national bankruptcy, while the sympathy of the downtrodden masses for democracy struggling to vindicate itself against domestic rebellion and the machinations of the aristocracies and monarchies of Europe will shape itself into deeds.

But, say British statesmen and their organs, democracy is already dead on the American continent, and there is no resurrection for it. The will soon find out that though democracy may have sleep, it was not and is not dead. On the contrary, it has awakened like a giant refreshed with new wine, and will become as terrible to kings and titled nobility as was France in 1792 and the years which followed. At that time "the republic, one and indivisible," had its own against all the armies of Europe, and came triumphant out of the struggle, its population and resources of the Northern States are greater than were those of France, and the "dividing ocean" is to the United States a barrier against successful invasion which the French republic did not possess. Democracy is not, therefore, destroyed. "The war is father to the thought" with those European statesmen who either openly or secretly sympathize with the Southern rebellion. The American republic hangs over them like a "murder cloud," and excites like their hatred and their fears. American democracy, so far from being destroyed by the insurrection, needed some occasion like this to bring out its strength. It is the useful preparation for its war with kings.

While the monarchies of Europe are being roused by the American rebellion, the United States will enjoy undiminished prosperity. The people will dispense with luxuries, and import little or nothing. England and France, and all the rest of the world, will be the basis of an internal trade between the twenty-five Northern States and their nearly twenty-three millions of population. This trade will be stimulated by the articles needed for the army and navy, and thus the specie will be kept in the country, money will circulate freely, and there will be abundant employment for all. Hence an all effect will be felt from the expenditures for the army and navy.—N. Y. Herald.

Joint Resolution authorizing the Appointment of Examiners to examine a Steam Floating Battery at Hoboken, New Jersey.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Navy be authorized to appoint a board of examiners to examine the iron steam battery now building at Hoboken, New Jersey, and ascertain what will be the cost of completing the same, how soon it can be completed, and the expediency thereof, and report thereon for the next meeting of Congress.

Approved, July 24, 1861.

A Resolution relative to the Exhibition of the Industry of all Nations to be held in London in the year eighteen hundred and sixty-two.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the President be, and he is hereby is, authorized to take such measures as shall to him seem best to facilitate a proper representation of the industrial interests of the United States at the exhibition of the industry of all nations to be held at London in the year eighteen hundred and sixty-two; and the sum of two hundred dollars is hereby appropriated for the incidental expenses thereof.

Approved, July 27, 1861.

A Resolution requesting the President of the United States to recommend a Day of Public Humiliation, Fasting, and Prayer.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That a joint committee of both Houses wait on the President of the United States and request that he recommend a day of public humiliation, prayer, and fasting, to be observed by the people of the United States with religious solemnity, and the offering of fervent supplications to Almighty God for the safety and welfare of these States. His blessings on their arms, and a speedy restoration of peace.

Approved, August 5, 1861.